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ABSTRACT

This report presents the findings of the 1981-82 evaluation of two projects that served 200 mildly mentally retarded students of limited English proficiency (L.E.P.) in New York City Public Schools during the 1981-82 school year. Project TRABAJO served six middle and secondary schools, while Individualized Bilingual Education for Children with Retarded Mental Development (Chapter 720) served the same schools as well as six other elementary schools. The programs were funded separately, but they functioned cooperatively and served many of the same students. Chapter 720 funds provided for five paraprofessionals who assisted the classroom teachers in the individualization of instruction and materials development. Project TRABAJO funds provided additional administrative support staff and resource services. Both programs supported staff development, curriculum and materials development, and parent involvement activities. An evaluation of student achievement indicates that: (1) the programs were generally effective in promoting student growth in language arts skills and mathematics; (2) program objectives for reading and oral proficiencies in Spanish and English were attained, while the objective in mathematics was surpassed; and (3) student achievement in career education skills was evident. Suggestions for further improvement are offered in the evaluation. (AOS)

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ANNUAL EVALUATION REPORT

E.S.E.A. TITLE VII

5001-62-27605

Chapter 720

5001-62-28401

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Project TRABAJO

and

Individualized Bilingual Education for Children with Retarded Mental Development

1981-82

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A SUMMARY OF THE EVALUATION OF THE 1981-82 TITLE VII PROJECT TRABAJO AND CHAPTER 720 INDIVIDUALIZED BILINGUAL EDUCATION FOR CHILDREN WITH RETARDED MENTAL DEVELOPMENT

These programs provided supplementary instructional and support services to approximately 200 students served in self-contained classes for mildly mentally retarded pupils with limited-English proficiency. Project TRABAJO served six middle and secondary schools; the Chapter 720 program served these same six schools and six elementary schools. Although these programs were distinct and funded separately they functioned cooperatively and served many of the same students. Chapter 720 funds provided for five paraprofessionals who assisted the classroom teachers in the individualization of instruction and materials development. Project TRABAJO funds were used to provide additional administrative support through a project coordinator, an office aide, and a school aide and resource services through a resource teacher. Both programs supported staff development, curriculum and materials development, and parent-involvement activities.

Inspection of pupil achievement gains over the course of the three program cycles indicates that the programs were generally effective in promoting student growth, particularly in language arts skills and mathematics. In the first year the objectives for reading and oral proficiency in Spanish were attained, in the second year the reading and oral proficiency objectives in English as well as in Spanish were attained, and for the present year objectives in Spanish and English reading and Spanish oral proficiency were attained. In mathematics, the objective was surpassed in all three years.

Substantial student achievement in career-education skills was evident for all three cycles. However, because of the adoption of a more rigorous criterion after the first year, the proposed objective was attained only for that year.

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I. INTRODUCTION

This report presents the findings of the evaluation of two projects that served mildly mentally-retarded students of limited-English proficiency (L.E.P.) in the New York City Public Schools during the 1981-82 school year: the E.S.E.A. Title VII program, Teaching Retarded Adolescents Bilingually: Academics and Job Orientation (Project TRABAJO); and the Chapter 720 program, Individualized Bilingual Education for Children with Retarded Mental Development (hereafter referred to as Chapter 720). Although these programs were distinct and funded separately, they functioned cooperatively with each supplementing the services provided by the other as well as those services provided through tax-levy funds. The coordinators worked together on most phases of both programs, particularly on curriculum development and parent activities. Both programs shared many of the same needs, objectives, and concerns and served many of the same students: Project TRABAJO served intermediate, junior high school, and high school students; Chapter 720 served these same students as well as an elementary-school population. Since the two programs operated together, the evaluation findings for both are presented together in this report.

Bilingual instruction is provided for mentally-retarded L.E.P. pupils in the New York City Public Schools by 14 tax-levy-funded teachers in self-contained classrooms administered by the Division of Special Education (D.S.E.). (D.S.E.). Chapter 720 funds provided for five paraprofessionals who supported and assisted these classroom teachers. Project TRABAJO funds were used to provide additional administrative support, and suppplementary and resource services for the classes in middle and secondary schools. Both the Chapter 720 program

and Project TRABAJO supported staff development, curriculum and materials development, and parent-involvement activities. The total D.S.E. program for mentally retarded L.E.P. students had an enrollment of approximately 200 students

Results of the evaluation of the two previous cycles indicated increasing effectiveness in promoting student growth in mainstream-language skills. In 1979-80 the programs attained pupil achievement objectives for reading and oral proficiency in Spanish but did not do so for the reading and oral-proficiency objectives in English; in 1980-81, all four language objectives were attained In addition, in 1980-81, the mathematics objective was attained. Although there were statistically significant program effects in both 1979-80 and 1980-81 on student growth in career-education skills, due to the adoption of a more rigorous criterion after 1979-80, the proposed objective was attained only for that year.

These programs were evaluated by the Office of Educational Evaluation (O.E.E.) through (1) the collection and analysis of pupil achievement data using a variety of published and project-developed instruments and (2) the collection and aggregation of data indicating the degree and quality of program implementation through direct observations and interviews. The observations and interviews focussed upon activities specific to and personnel funded through each program. Accordingly, the findings from the analyses of these data are presented in separate chapters for each program. However, since both programs together affected pupil achievement, the findings from the analyses of test data are presented in a single chapter. Furthermore, the conclusions and recommendations of this evaluation are presented in a single chapter which addresses these programs both collectively and individually.

II. EVALUATION OF THE IMPLEMENTATION OF PROJECT TRABAJO

PROGRAM DESCRIPTION

This program was designed to develop the personal, social, academic, and job-related skills of approximately 100 Spanish-speaking L.E.P. students in classes for the mildly retarded at the following schools:

.Junior High School 99, Manhattan;
.Junior High School 204, Queens;
.Intermediate School 291, Brooklyn;
.Intermediate School 293, Brooklyn;
.Brandeis High School, Manhattan; and
.Eastern District High School, Brooklyn.

At these sites, the program operated throughout the entire six hour and 20 minute school day. The basic educational program was provided by six classroom teachers and six paraprofessionals supported by tax-levy and Chapter 720 funds.

The project TRABAJO staff included a coordinator, one resource teacher, one office aide, and a school aide. The coordinator and two resource teachers (one tax-levy funded) assisted the classroom teachers in the implementation of the project's career-education curriculum. This curriculum is an adaptation of the state-validated General Job Skills Curriculum Guide, originally developed under an E.S.E.A. Title IV-C grant. The curriculum stresses relevant career-education concepts and skills and includes activities for developing appropriate personal, social, and occupational skills.

Academic instruction was provided in the students' first language, Spanish, and in their second language, English. English-language proficiency was strengthened through English-as-a-second-language (E.S.L.) instruction. Cognitive/academic instruction emphasized functional, work-related, and survival skills. Instruction in E.S.L., Spanish-language arts, social studies, mathematics, science, cultural heritage, music, art,

motor/physical education, and the industrial arts were tied into the dominant curriculum themes, career awareness, functional literacy, and interpersonal skills.

Individualization of instruction was stressed through in-service workshops conducted throughout the school year, and was implemented with the assistance of the participating paraprofessionals (funded through tax-levy and Chapter 720) and resource teachers. The classroom teachers and paraprofessionals worked with small groups of students using a diagnostic-prescriptive approach. Instruction was personally tailored to each students' needs, a critical program feature due to the wide range in age, language-proficiency levels, and academic achievement.

Students participating in the program were selected following recommendation by the Committees on the Handicapped (C.O.H.) or referral by supervisors, teachers, or other pedagogical staff with C.O.H. approval.

DIRECT INSTRUCTION

Six observations of classroom instruction were conducted by O.E.E. between December, 1981 and May, 1982. As in past cycles, teachers in the program exhibited strong skills in teaching through both languages, the ability to provide a learning challenge that was compatible with the individual learning capacity of the target students, and an awareness of the students' bicultural identity. In addition, the teachers displayed an effective system of discipline and classroom management and were successful in providing a pleasant, well-organized educational environment. Esthetic, well-organized bulletin boards containing material relevant to the program were apparent in most classrooms.

These bulletin boards displayed samples of students' work in both English and Spanish. Classroom rules were also posted in both languages.

The classroom teachers all exhibited excellent rapport with students. Teachers demonstrated knowledge of and concern for the students' linguistic, cultural, personal, and individual cognitive/academic needs which enhanced pupil motivation. Careful attention to individualization helped create a structured and organized atmosphere and a secure and comfortable learning environment. Students were, without doubt, proud of their accomplishments.

Daily classroom instruction was provided in the major content areas outlined in the program proposal, including reading, language arts, mathematics, and career education.

All instruction was bilingual with the proportion of teaching in Spanish or English dependent on individual student needs. Generally, instruction was first presented to the entire class or to small groups, and students were assigned individualized follow-up work depending on their functional level. Frequently, a number of groups worked simultaneously while either the teacher or the paraprofessional worked with a single child or a small group of two. A favored method of instruction was to alternate large-group instruction with small-group instruction and independent seat work which appeared to sustain student interest and task orientation. Learning stations, geared toward individualized, career-education activities were also prominent. In many of the observed lessons the overall focus was the incorporation of career-education concepts into basic academic instruction, in particular, Spanish language arts and E.S.L.

Career-education instruction was enriched through supplemental activities developed by the teachers and paraprofessionals, under the guidance of the

coordinator and with the assistance of the Chapter 720 coordinator. Each year program-developed career-education activities were refined, field-tested, and prepared for publication. In 1981-82 the program focussed on activities of daily living; the resulting curriculum guide was Abre Las Puertas. The curriculum guide developed during the first program cycle was the Manos A La Obra, a comprehensive and engaging set of activities for the promotion of job-related skills through games, media, performing arts, poetry, learning centers, and trips. The guide developed in 1980-81 was called Companero Dame La Mano and presented activities promoting a positive and relistic self-image, understanding of one's feelings and the effects of one's behavior on others, social skills communication, and worker attitudes.

A variety of materials were observed in use. Published materials which teachers found particularly effective included: La Follette Continuing Arthmetic, Math For Today, and Real Life Math Skills; Ocean Publication E.S.L. materials; McGraw Hill A Cada Paso; Reader's Digest low achievement level material; and the program-developed Manos a La Obra and Companero Dame La Mano.

Because of the limited availability of commercially-produced high interest, low achievement instructional materials in Spanish, teachers frequently adapted or developed materials to meet their students' needs. Often these incorporated multi-modal instructional approaches, including tactile, kinesthetic, visual, and auditory. Classroom paraprofessionals assisted in their development, adaptation, and presentation.

STUDENT RECORDS AND ASSESSMENT

Individual student folders were readily available in all classrooms

visited. They contained the individual education plan (I.E.P.), current and previous samples of student work, and an overview of each student's educational development. In almost every room, students' names were prominently displayed along with a list of skills and an indication of whether the skill had been mastered.

Assessment materials used included the Leamos Spanish Developmental Reading Test (Leamos), Diagnostic Mathematics Inventory (D.M.I.), a language-sample procedure based on the Basic Inventory of Natural Language (B.I.N.L.), the Career Education Assessment Instrument, and the Prescriptive Reading Inventory (P.R.I.). Teachers reported that they liked both the Career Education Assessment Instrument and the B.I.N.L., but had varied opinions of the Leamos and D.M.I. instruments. Some felt the Leamos required too much testing and others that the D.M.I. did not test the skills taught in sufficient depth. On the other hand, most found both of these instruments very useful in planning instruction.

STAFF DEVELOPMENT

The classroom teachers participated in full-day and after-school inservice workshops designed to increase their practical knowledge and skills in bilingual instruction to more effectively serve students. Because of the complex nature of the curriculum and the students' needs, the focus of these workshops was on curriculum integration and individualization of instruction.

The project coordinator has continued to maintain especially high standards in staff development, evidenced by the successful classroom atmospheres observed. Classroom personnel followed an organized schedule which was closely monitored. In addition, small-group instruction and individualization continued to be maintained with the help of the paraprofessionals. The

project coordinator provided continuous feedback regarding classroom instruction, use of resources, and additional resources needed.

Generally, the teachers participating in the program were well prepared. Most had received training in special education and bilingual education. They reported an average of seven years teaching experience, three years as bilingual teachers, and two years in bilingual special education. Additional staff development was provided through the teachers' completion of approved graduate courses related to bilingual special education; a number of teachers were taking advanced courses or pursuing graduate degrees in this area.

PARENT INVOLVEMENT

Parent involvement in the program continued to be difficult to stimulate, but steady improvement has been apparent over the three program cycles. Project-advisory-committee meetings and parent workshops were held again this year to inform parents about the program, define the parents' role and the school's role in meeting their children's needs, and address other issues of concern to parents of handicapped L.E.P. students. In addition, all teachers reported that they maintained communication with the parents of all students in their classes through telephone calls, letters, and visits.

RELATIONSHIP WITH SITE ADMINISTRATION

Six site administrators were interviewed concerning Project TRABAJO. All were pleased to have program services and were uniformly positive about the teacher training. The only concern expressed by administrators was the desire for more ongoing communication with the program coordinator. Program effects on students which were cited included: substantial decrease in

in discipline problems, marked improvement in academic level, and evident student pride in their accomplishments.

III. EVALUATION OF THE IMPLEMENTATION OF THE CHAPTER 720 PROGRAM

PROGRAM DESCRIPTION

This program was designed to individualize instruction in New York City's bilingual classes for mildly-retarded students. The project operated during the regular school day at twelve sites at the elementary-, middle-, and high-school levels. At the middle and high schools, the program operated cooperatively with Project TRABAJO and the two program coordinators worked closely together, particularly on curriculum development and parent activities.

The Chapter 720 program provided funds for paraprofessionals to aid bilingual classroom teachers in individualizing instruction in the areas of Spanish-language arts, E.S.L., and mathematics. The paraprofessionals were trained and supervised to develop a close and effective working relationship with the teachers in order to optimally meet the needs of the students.

In addition to the six schools served by Project TRABAJO, the program served the following elementary schools:

.P.S. 115 Manhattan;
.P.S. 102, Manhattan;
.P.S. 17, Brooklyn;
.P.S. 10, Brooklyn;
.P.S. 242, Brooklyn; and
.P.S. 150, Queens.

During the 1980-81 school year, a total of 11 paraprofessionals (five were funded by Chapter 720) worked together with 14 classroom teachers serving approximately 150 L.E.P., Spanish-speaking, mentally-retarded students, ranging in age from eight to 21 years. The program also had the services of a tax-levy resource teacher. In addition, there was on 11-member non-salaried community project advisory committee which included

eight parents of eligible students.

Participants in the program were selected through referral, evaluation, and placement by the C.O.H.; referrals were made by special education teachers, supervisors, or other personnel.

DIRECT INSTRUCTION

Under the supervision of the tax-levy classroom teachers, the program's paraprofessionals provided classroom support which facilitated the individualization of instruction and attention to students' specific needs. Most of the participating classes had a full-time paraprofessional; two classes were served by one paraprofessional who worked in each class half-time.

Eight classes were visted by O.E.E. field consultants who observed individual tutoring, small-group work, and lessons presented to the entire class. Lessons covered reading and language arts in Spanish and English, mathematics, and daily living activities. On most occasions instruction was carried out in Spanish, although sometimes Spanish was used to supplement material presented in English. Within each class varying degrees of bilingualism were exhibited, with some students able to function in both Spanish and English and some able to understand and express themselves in Spanish only. Given the range of cognitive ability and language proficiency, individual and small-group instruction was necessary if all students were to receive the full benefits of the instruction offered to them.

The overall instructional approach observed in most classrooms was diagnostic-prescriptive; individual strengths and weaknesses of students were diagnosed through criterion-referenced tests and instruction pre-

scribed accordingly. Instruction in the following areas was offered daily: English as a second language (E.S.L.), Spanish reading, English reading, math, and Spanish language arts.

In the E.S.L. lessons observed, the paraprofessionals used a variety of commercially-produced, and teacher-made or -adapted materials. Instruction employed a range of sensory modalities to promote the development of oral-language and communication skills. Materials frequently used included Everyday English as a Second Language (Voluntad Publishers), Steps to English (McGraw Hill), and the D.L.M. language development cards and games. Daily English reading instruction was also promoted through a variety of texts and materials, both commercial and teacher-made or -adapted. Among these were the Barnell-Loft Multiple Skills Series, the Santillana Readers, Modern Curriculum Press texts and workbooks, and Bank Street basal reading series.

Materials used in Spanish language arts and reading instruction included Cartilla Fonetica, Santillana Bilingual Series, Caracolitos (Economy Company), A Cado Paso (McGraw Hill), and curriculum guides issued by the Division of Special Education (Una Experiencia En Lectura and Una Guia para La Ensenanza de la Posesia en las Clases Bilingues Especiales.)

Mathematics skills were taught using flash cards, concrete objects such as coins and bills, and the abacus as well as formal instructional series including the Silver Burdett Mathematics Series and the SRA Individualized Skills Program.

In all curriculum areas, individualization of instruction was carried out with the active help of the paraprofessionals who worked with small groups, pairs, or individual students. Paraprofessionals also helped in the

preparation of materials for future lessons, the administration and recording of tests, and classroom management. Again, through their observed energy, commitment, and perseverance, the paraprofessionals, under the supervision of the tax-levy teachers, were full partners in the total education process.

STAFF DEVELOPMENT

The program coordinator selected paraprofessionals who demonstrated bilingual competence, bicultural sensitivity, and expertise in special education. Most of the seven paraprofessionals interviewed had more than the requisite high school diploma and six college credits. For example, one held an advanced degree in special education and was studying English several hours per week. In terms of experience they were also well-qualified; the mean number of years as paraprofessionals was eight, years in bilingual education was about seven, and years in bilingual special education was nearly four.

The paraprofessionals interviewed were highly positive about the ongoing biweekly workshops conducted by the program coordinator. The workshops were designed to further develop the paraprofessionals' competence by keeping them abreast of current research and development in the field of bilingual special education and assisting them in identifying, developing, and adapting appropriate materials. These training workshops were expanded in the 1981-82 cycle to include all bilingual special education paraprofessionals.

Workshop topics for the current year included: teaching Spanish language arts, teaching E.S.L., Hispanic folklore, museums as a learning resource, and classroom management, and consumer education and nuturition. Often the

presentations were continued for more than one session. Presenters were from agencies, local universities, and Board of Education offices including the Native Language Reading Program Unit of the Office of Bilingual Education and the Special Education Training and Resource Center.

The effectiveness of the staff development workshops was most apparent in the paraprofessionals' competence in the classroom. In addition, many teachers acknowledged the skills and ideas gained by the paraprofessionals at the workshops and remarked on the assistance the paraprofessionals had given them when they first began to teach in bilingual special education.

PARENT INVOLVEMENT

The Chapter 720 program coordinator worked together with the coordinator of Project TRABAJO to secure the involvement of parents. Dissemination of information to parents, and parent workshops were sponsored by both programs. As observed in previous evaluations, attaining a high level of parent involvement continued to be extremely difficult. Coordinators and staff attempted to inform all parents of meetings for information sharing and parent training. The distances parents had to travel, as well as occupational or economic constraints, appeared to limit the level of parent involvement.

Eight parents were members of the project advisory committee which met monthly through the year.

IV. QUANTITATIVE EVALUATION

This chapter presents the results of analyses of test data gathered to measure the attainment of the objectives of the Chapter 720 program and Project TRABAJO. Since these programs functioned cooperatively and served many of the same students, virtually every pupil measure, with the possible exception of the career-education instrument, was influenced by the activities of both programs.

The following sections present analyses of attendance and achievement data for the total population, and separately for the elementary students, who were served only by Chapter 720, and the middle and secondary students, who were served by both Project TRABAJO and Chapter 720.*

ATTENDANCE

Data were reported for 205 students for the 1981-82 school year. Complete achievement data were submitted for a total of 162 students: 74 were in elementary schools; 88 were in middle and high schools. The students were served by each program five days a week for the full school day (six hours and 20 minutes). For the total population, the mean number of days attended, was 116 days (S.D. = 43.7); the median was 130. The mean percentage of attendance was 79.9 percent (S.D. = 21.4). The elementary students attended a mean of 117.2 days (S.D. = 43.0) with a median of 134.5. The mean percentage of attendance for this group was 80.2 (S.D. = 19.9). The middle and high school students attended a mean of 115.8 days (S.D. = 44.6) with a median of 127.5. The mean percentage of attendance was 79.6 (S.D. = 22.6).

*Since not all of the data were available for all of the students, the Ns vary among the analyses.

OBJECTIVE 1. ORAL PROFICIENCY IN SPANISH

Both programs taught Spanish oral language skills but this was a formal objective only for the Chapter 720 program. The objective was that by June, 1982, target students would show statistically significant improvement, at the .05 level, in oral proficiency in Spanish, as measured by comparisons of language samples taken during October, 1981 and June, 1982. The samples consisted of the students' oral productions in response to the presentation of pictorial stimuli that related to the program's curriculum. Stimuli were presented individually until five sentences were produced and the average sentence length was scored in T units through a process adapted from the B.I.N.L. The mean pre- and post-test scores were compared through the application of t tests for correlated samples.

Table 1 presents the results of the comparisons of the mean pre- and post-test scores for the total population and for the elementary students and the middle and high school students. Statistically significant gains were observed for two of the three comparisons ($p < .05$) and the third comparison approached significance ($p = .06$). The mean gains for the three analyses were practically the same magnitude: 0.6 T units for the total population; 0.7 T units for the elementary students; and 0.5 T units for the middle and high school students. Thus, the findings indicate that the criterion for the Spanish language objective was effectively met.

OBJECTIVE 2. ORAL PROFICIENCY IN ENGLISH

Similarly, both programs provided English-language instruction, but only the Chapter 720 program proposed that by June, 1982, the students would show statistically significant improvement, at the .05 level, in oral proficiency in English. The objective was measured in the manner described above for Objective 1.

TABLE 1

Comparisons of the Mean Pre- and Post-test Spanish-Language-Proficiency Scores for the Total Population and by School Level (Measured in I Units)

Population	Language Sample	Mean Score	S.D.	Mean Gain	t (d.f.)
Total Population	Pre	6.0	1.8	0.6	3.1**
	Post	6.6	2.1		(130)
Elementary[a]	Pre	5.4	1.1	0.7	3.7**
	Post	6.1	1.7		(49)
Middle and High School	Pre	6.4	2.1	0.5	1.9 n.s.
	Post	6.9	2.2		(80)

n.s. = not significant, $p = .06$

**$p < .01$

[a]This group was served only by Chapter 720.

.Comparisons of mean pre- and post-test scores showed statistically significant, or near-significant gains in oral Spanish proficiency.

Table 2 presents a summary of the comparisons of the mean pre- and post-test oral-English-proficiency scores for the total population and the two groups. Statistically significant gains were observed for any of the three comparisons. The mean gains were 0.1 T units for the middle and high school students, 0.2 for the total population, and 0.4 for the elementary students. Thus, the findings indicate that the criterion for the objective was not met.

OBJECTIVE 3. SPANISH READING MASTERY

The mastery of skills in Spanish reading was an objective of both programs. Specifically, the objective stated that by June, 1982, at least 80 percent of the target students would master at least four new objectives in Spanish reading as measured by the Leamos Spanish Reading Test. Test administration was ongoing, that is the students were tested for the mastery of specific reading objectives upon the completion of each instructional unit. Attainment of the criterion for this program objective was determined by the construction of a frequency distribution of the total number of objectives mastered by the students throughout the school year.

Table 3 presents the frequency distribution of Spanish-reading skills mastered by the total population; Table 4 and Table 5 present the same data for the two school-level groups. Inspection of these tables reveals that the criterion was attained by the total population and both groups. At least four new objectives in Spanish reading were mastered by 96.9 percent of the total population, 95.6 percent of the elementary students, and 97.9 percent of the middle and high school students. Mastery for the total population ranged from a low of no skills mastered (two students, 1.2 percent of the population) to a high of eight skills (one students, 0.6 percent). The mean number of

TABLE 2

Comparisons of the Mean Pre- and Post-test
English-Language-Proficiency Scores
for the Total Population and by School Level
(Measured in I Units)

Population	Language Sample	Mean Score	S.D.	Mean Gain	t (d.f.)
Total Population	Pre	5.6	2.1	0.2	$1.4^{n.s.}$
	Post	5.8	1.8		(134)
Elementary[a]	Pre	5.2	1.5	0.4	$1.8^{n.s.}$
	Post	5.6	1.2		(53)
Middle and High School	Pre	5.8	2.4	0.1	$0.6^{n.s}$
	Post	5.9	2.2		(80)

n.s. = not significant

[a]This group was served only by Chapter 720.

.Comparisons of mean pre- and post-test scores showed slight but non-significant gains in oral English proficiency.

TABLE 3

Frequency Distribution of the Mastery of Spanish-Reading Objectives for the Total Population (Measured by the Leamos Spanish Reading Test)

Number of Objectives Mastered	Number of Students	Relative Percent	Cumulative Percent
10 or more	5	3.0	3.0
9	4	2.4	5.4
8	7	4.2	9.6
7	12	7.3	16.9
6	16	9.7	26.6
5	44	26.7	53.3
4	72	43.6	96.9
3	3	1.8	98.7
2	2	1.2	99.9[a]
	165		

[a]Does not total 100 percent due to rounding error.

.Nearly 97 percent of the total population mastered at least four new Spanish-reading skills; the criterion of 80 percent was exceeded.

TABLE 4

Frequency Distribution of the Mastery of Spanish Reading Objectives for the Elementary Students (Measured by the Leamos Spanish Reading Test)

Number of Objectives Mastered	Number of Students	Relative Percent	Cumulative Percent
9	5	7.1	7.1
8	3	4.3	11.4
7	5	7.1	18.5
6	10	14.3	32.8
5	22	31.4	64.2
4	22	31.4	95.6
3	1	1.4	97.0
2	2	2.9	99.9[a]
	70		

[a]Does not total 100 percent due to rounding error.

.Nearly 96 percent of the students mastered at least four skills in Spanish reading; the criterion of 80 percent was exceeded.

TABLE 5

Frequency Distribution of the Mastery of Spanish-Reading Objectives for the Middle and High School Students (Measured by the Leamos Spanish Reading Test)

Number of Objectives Mastered	Number of Students	Relative Percent	Cumulative Percent
10 or more	4	4.3	4.3
8	4	4.3	8.6
7	7	7.4	16.0
6	6	6.4	22.4
5	22	23.4	45.8
4	49	52.1	97.9
3	2	2.1	100.0
	94		

.Nearly 98 percent of the students mastered at least four new skills in Spanish reading; the criterion of 80 percent was exceeded.

skills mastered was 5.2, the median 4.6, and the mode four. The means for the elementary students and the middle and high school students were 5.3 skills and 5.1 skills, respectively. More than 98 percent of the objectives mastered by all students were associated with the Fundamental stage of the Leamos Spanish Reading Test. Eighty-nine percent of the objectives mastered by the elementary school students were at the Primary Level of the Fundamental Stage; 11 percent were at the Advanced Level. For the middle and high school students, 52 percent of the objectives mastered were at the Primary Level; 48 percent were at the Advanced Level of the Fundamental Stage.

OBJECTIVE 4. ENGLISH READING MASTERY

The mastery of skills in English reading by students who received instruction in that subject was an objective of both programs. The objective proposed that by June, 1982, 80 percent of students receiving English-reading instruction would master at least four new objectives as measured by the Prescriptive Reading Inventory. Test administration was ongoing.

Table 6 presents the frequency distribution of the number of English-reading skills mastered by the total population. Eighteen students received instruction in English reading. The number of skills mastered ranged from a low of three (two students, 11.1 percent of the population) to a high of 11 (one student, 5.6 percent). More than 89 percent of the students mastered at least four English-reading objectives. Thus, the criterion for this objective was surpassed. The mean number of objectives mastered was five; the mode was four.

TABLE 6

Frequency Distribution of the Mastery of
English-Reading Skills by the Total Population of
Those Students who Received English-Reading Instruction
(Measured by the Prescriptive Reading Inventory)

Number of Skills Mastered	Number of Students	Relative Percent	Cumulative Percent
7 or more	3	16.8	16.8
6	1	5.6	22.4
5	2	11.1	33.5
4	10	55.6	89.1
3	2	11.1	100.2[a]
	18		

[a]Cumulative percent exceeds 100 percent due to rounding error.

.More than 89 percent of the students mastered at least four new skills in English reading; the criterion of 80 percent was surpassed.

OBJECTIVE 5. MASTERY OF MATHEMATICS SKILLS

Both programs focused upon the mastery of mathematics skills but only the Chapter 720 program proposed a student achievement objective in this area. The objective stated that by June, 1982, 80 percent of the target students would master at least four new skills in mathematics as measured by the Diagnostic Mathematics Inventory. As with the other criterion-referenced instruments employed in this evaluation, test administration was ongoing.

Table 7 presents the frequency distribution of the number of math skills mastered by the total population. Mastery ranged from a low of one new skill (four students, 2.4 percent of the population) to a high of 14 skills (one student, 0.6 percent). Almost 96 percent of the population mastered at least four new skills. The mean number of skills mastered was 4.8; the median was 4.2 and the mode was four. Thus, the criterion for this objective was surpassed.

Table 8 presents the frequency distribution of skills mastered by elementary school students. Approximately 78 percent met the four-skill criterion. However, application of the binomial test indicated that the observed value of 78 percent did not differ significantly from the proposed value of 80 percent ($Z = 0.22$, $p < .42$). The mean was 5.0 and the median was 4.3.

Table 9 presents the frequency distribution of math skills mastered by middle and high school students. Nearly 93 percent of the students attained the four-skill criterion. The mean was 4.4 and median was 4.3.

A breakdown of mastery by test level and students' school group indicated that almost all the students, regardless of school group, were in-

TABLE 7

Frequency Distribution of the Mastery
Of Math Objectives by the Total Population
(Measured by the Diagnostic Mathematics Inventory)

Number of Skills Mastered	Number of Students	Relative Percent	Cumulative Percent
10	9	5.4	5.4
9	6	3.6	9.0
8	1	0.6	9.6
7	9	5.4	15.0
6	12	7.2	22.2
5	19	11.4	33.6
4	89	53.3	86.9
3	8	4.8	91.7
2	10	6.0	97.7
1	4	2.4	100.1[a]
	167		

[a]Cumulative percent exceeds 100 percent due to rounding error.

.Nearly 87 percent of the students mastered at least four new skills; the criterion of 80 percent was surpassed.

TABLE 8

Frequency Distribution of the Mastery of
Math Objectives by Elementary Students
(Measured by the Diagnostic Mathematics Inventory)

Number of Skills Mastered	Number of Students	Relative Percent	Cumulative Percent
7 or more	9	12.9	12.9
6	4	5.8	18.7
5	7	10.1	28.8
4	34	49.3	78.1
3	7	10.1	88.2
2	7	10.1	98.3
1	1	1.4	99.7[a]
	69		

[a]Does not equal 100 percent due to rounding error.

.Over 78 percent of the students mastered at least four new skills; this value did not differ significantly from the criterion of 80 percent ($Z = 0.22$, $p < .42$).

TABLE 9

Frequency Distribution of the Mastery of
Math Objectives by Middle and High School Students
(Measured by the Diagnostic Mathematics Inventory)

Number of Skills Mastered	Number of Students	Relative Percent	Cumulative Percent
10 or more	6	6.1	6.1
9	6	6.1	12.2
8	1	1.0	13.2
7	3	3.1	16.3
6	8	8.2	24.5
5	12	12.2	36.7
4	55	56.1	92.8
3	1	1.0	93.8
2	3	3.1	96.9
1	3	3.1	100.0
	98		

.Nearly 93 percent of the students mastered at least four new skills; the criterion of 80 percent was surpassed.

structed in the first two D.M.I. levels. Together these are considered to be equivalent to early primary school material. (These data are presented in Table 10.)

Level A, on which a total of 56 students mastered objectives, emphasizes preoperational concepts, counting, and matching; addition and subtraction of whole numbers; and measurement, sequences, and missing addends.

In all, 95 students mastered objectives at Level B in which counting and matching skills continue to be taught; regrouping, multiplication, and fractions are introduced; and measurement skills are expanded.

Level C objectives were mastered by 23 students. Instruction at this level covers all basic arithmetic operations and fractions, geometry, measurement, place value, and problem solving.

OBJECTIVE 6. MASTERY OF CAREER EDUCATION SKILLS

Project TRABAJO provided middle- and high school-level students with career education instruction. The objective of this instruction was that by June, 1982, 80 percent of the students would attain a score of at least 80 percent (the operational definition of mastery) on the subtests of the Career Education Assessment Instrument related to the career education topics in which they were instructed. The instrument was translated and adapted from the Social and Prevocational Information Battery, with the permission of the publisher, by project personnel during the 1979-80 funding year. The test was administered to the Project TRABAJO students during May, 1982 in a post-test only design. The instrument consists of seven subtests with a total of 80 items. The subtests examine the following career education areas: Functional Vocabulary; Purchasing; Banking; Job-Related Behavior; Job Search

Table 10

Numbers of Students from Each School Group Mastering Objectives at Each Level of the Diagnostic Mathematics Inventory

School Group	Test Level A[a]	B[b]	C[c]
Elementary	30	35	6
Middle	18	41	10
High School	8	19	7
Total[d]	56	95	23

[a]Level A emphasizes preoperational concepts, counting, and rudimentary computation.

[b]Level B emphasizes addition and subtraction with regrouping, fractions, and measurement.

[c]Level C emphasizes all arithmetic operations, fractions, geometry, and problem-solving.

[d]A total of seven students mastered objectives at more than one level, hence the discrepancy with population figures reported elsewhere.

.Over half of the students were instructed on Level B of the D.M.I.

Skills; Home Management Skills; and Health, Hygiene, and Grooming. The scores that were analyzed were derived from the subtests in which each student received instruction. Accordingly, the number of scores analyzed for each subtest varied.

Table 11 presents a summary of pupil performance on the Career Education Assessment Instrument. For each of the seven subtests, the table presents the number of students receiving related instruction, the percentage of those students attaining mastery (i.e., the criterion score of 80 percent), and the mean percentage score. Across all subtests, the percentage of students achieving a score of 80 percent was 61.9 percent; the criterion for the program objective was 80 percent. The mean score across all subtests was 77.9 percent.

Inspection of the data in Table 11 by subtest reveals that the criterion for the objective was attained or largely attained for two of the seven subtests: Functional Vocabulary (77.0 percent attained mastery) and Banking (90.4 percent). The highest mean score observed for the students was 91 percent for Banking.

Although the criterion for the career education objective was not attained, further analysis of the data suggested that the program did have an impact upon the career education skills of the Project TRABAJO students. To determine whether program instruction significantly affected the scores of the pupils on the Career Education Assessment Instrument, the mean scores of those students receiving instruction and those students not receiving instruction were compared within each of three subtests: Banking, Job-Related Behavior, and Health, Hygiene, and Grooming. These three subtests were selected for comparison since there were suffi-

TABLE 11

Summary of Pupil Performance on the
Career Education Assessment Instrument
(Project TRABAJO Students)

Subtest	Number of[a] Students	Percentage[b] Meeting Criterion	Mean[c] Score
Functional Vocabulary	100	77.0	86.8
Purchasing	90	46.7	71.9
Banking	52	90.4	91.0
Job Related Behavior	52	59.6	81.2
Job Search Skills	90	40.0	64.7
Home Management	100	72.0	80.0
Hygiene and Grooming	33	45.5	71.8
		61.9	77.9

[a]Number of students receiving instruction in subtest area.

[b]Percentage of students instructed in subtest area that scored at least 80 percent.

[c]Mean percentage of items correct for students instructed in subtest area.

- Across all subtests, 61.9 percent of the students receiving related instruction scored at least 80 percent; the criterion for the objective (80 percent) was not attained.
- The criterion was attained or nearly attained for two subtests: Functional Vocabulary and Banking.

cient numbers of students receiving and not receiving related instruction to permit meaningful analysis. For each subtest, the scores of the subjects in both groups (i.e., instructed and not instructed) were rank ordered from low to high along a single continuum. The mean ranks for the two groups were compared through the Mann Whitney U test. Table 12 presents a summary of these analyses. For two of the three subtests, the mean rank of the instructed group was significantly higher than that for the non-instructed group and for the third it approached significance. For Banking, the mean ranks for the instructed and non-instructed groups were 64.5 and 35.4, respectively ($\underline{Z} = 5.19$, $\underline{N} = 100$, $\underline{p} < .01$); for Job-Related Behavior, the mean ranks were 60.4 and 39.8, respectively ($\underline{Z} = 3.59$, $\underline{N} = 100$, $\underline{p} < .01$); and for Health, Hygiene and Grooming, the mean ranks were 58.0 and 46.8, respectively ($\underline{Z} = 1.88$, $\underline{N} = 100$, $\underline{p} = .06$). Across the three subtests, the mean score (percentage correct) was 81.3 for the instructed group and 70.9 for the non-instructed group.

TABLE 12

Comparisons of the Mean Ranks of Scores of Instructed And Non-Instructed Project TRABAJO Students For Three Subtests of the Career/Education Assessment Instrument

Subtest	Group	N	Mean[a] Score	Mean[b] Rank	U[c]	Z
Banking	Instructed	52	91.0	64.5	521.0	5.19**
	Non-Instructed	48	75.6	35.4		
Job-Related Behavior	Instructed	52	81.2	60.4	733.0	3.59**
	Non-Instructed	48	71.0	39.8		
Hygiene and Grooming	Instructed	33	71.8	58.0	857.0	1.88[n.s.]
	Non-Instructed	67	66.1	46.8		

n.s. = not significant, $p = .06$

** $p < .01$

[a] Mean percentage of items answered correctly.

[b] Mean rank of the scores of each group along a single continuum from low to high.

[c] Mann-Whitney U statistic

For all three subtests, the mean ranks of the scores of the students receiving instruction were higher than those of the students not receiving instruction; i.e., the instructed students demonstrated better careeer education skills than those not receiving instruction. For Banking and Job-Related Behavior, the mean ranks for students receiving instruction were significantly higher and for Hygiene and Grooming approached significance.

IV. CONCLUSIONS AND RECOMMENDATIONS

The conclusions of the evaluation concern (1) the impact of Project TRABAJO and Chapter 720 upon pupil achievement, based on the analyses of test data, and (2) the quality of implementation, based on classroom observations and interviews. Although, for the most part, these conclusions pertain to the programs collectively, where identifiable, the individual effects of each program are indicated.

Analyses of pupil achievement data indicated that in 1981-82 four of the six objectives for these programs were attained: the objectives of both programs for reading in English and Spanish were attained, as were the Chapter 720 objectives for oral proficiency in Spanish and mathematics. The objective of the Chapter 720 program for oral proficiency in English was not attained. Although supplementary analysis revealed a statistically significant program effect, the Project TRABAJO objective for career education was not attained.

Inspection of pupil achievement gains over the course of the three program cycles indicates general effectiveness in promoting student growth, particularly in language arts skills and mathematics. In the first year the objectives for reading and oral proficiency in Spanish were attained, in the second year the reading and oral proficiency objectives in English as well as in Spanish were attained, and for the present year three out of four were attained. In mathematics, the objective was surpassed all three years.

Substantial student achievement in career education skills was evident for all three cycles. However, because of the adoption of a more rigorous criterion after the first year, the proposed objective was attained only for that year.

While the programs functioned cooperatively, observations were made of their separate operations. Accordingly, the conclusions concerning the quality of implementation are presented separately for each program.

Observations of Project TRABAJO again revealed the following program strengths:

--the program was closely and effectively supervised by the program coordinator;

--all program personnel were enthusiastic and demonstrated knowledge of and skill in both bilingual education and special education;

--the staff-development component was comprehensive, relevant, and varied, including in-service workshops, on-site training, and academic instruction;

--the program coordinator and resource specialists, provided strong support for the classroom teachers;

--the three program-developed curriculum guides, Manos a La Obra, Companero Dame La Mano, and Abre Las Puertas, were an important contribution to materials specifically for handicapped L.E.P. students;

--the staff demonstrated sensitivity and awareness of cross-cultural differences and provided activities that bolstered the students' knowledge and esteem for the native and mainstream cultures;

--systematic instruction in both Spanish and English promoted the students' confidence and skill in both languages; and

--there was effective coordination of both programs which optimized the impact upon the target students.

Although the program has proven to be a superior one, the following recommendations are offered with a view toward strengthening an already impressive performance. Accordingly, it is recommended that:

--the program continue and expand efforts to identify, create, or adapt curriculum materials appropriate for the target population;

--the program continue to secure the involvement of parents in the educational process;

--the program continue to develop instructional materials which match the linguistic and cognitive levels of L.E.P. mentally-retarded students; and

--teachers receive additional training in identifying the communication skills students need to participate more fully in classroom learning.

The Chapter 720 program generally appeared quite successful in enhancing the educational process for bilingual mentally-retarded students. The program's success appears attributable to the improved individualization of instruction resulting from the classroom assignment of paraprofessionals and the demonstrated competence and creativity of these paraprofessionals in both direct instruction and materials development. The strength of this program seemed to rest in the recruitment of high calibre personnel who had the requisite linguistic, cultural, and personal qualities needed to make the educational environment pedagogically sound and psychologically secure. The students benefited immensely from the presence of the paraprofessionals who added emotional as well as instructional support.

Recommendations for this meritorious program are as follows:

--recruitment of paraprofessionals should continue to emphasize strong linguistic skills in both English and Spanish, and bicultural skills;

--staff development workshops should continue to strengthen the instructional skills of paraprofessionals in E.S.L., reading, and mathematics; and

--the involvement of paraprofessionals in developing their own materials for the curriculum should continue.

On the basis of the gains in student performance, as well as the observed motivation and responsivenes of the students to the paraprofessionals, it is strongly recommended that this program model be replicated.